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09/809,440	03/15/2001	Gareth Hougham		4926

7590 07/30/2003  
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13

EXAMINER

FONTAINE, MONICA A

ART UNIT PAPER NUMBER

1732

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/809,440

Applicant(s)

HOUGHAM, GARETH

Examiner

Monica A Fontaine

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## **DETAILED ACTION**

### ***Claim Objections***

Claim 3 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (U.S. Patent 6,355,198), in view of Rosato's Injection Molding Handbook (3<sup>rd</sup> ed.). Kim et al., hereafter "Kim," show that it is known to carry out a method of making a stamp for microcontact printing, said method substantially eliminating pattern distortion of said stamp formed as a result of said method (Column 4, lines 36-54; Column 10, lines 12-17), comprising molding an elastomer reactive mix into a mold (Column 44, lines 23-27); substantially curing and crosslinking said elastomer reactive mix in said mold for a period of time ranging from in excess of one hour to one week and beyond, at a substantially constant temperature to form an article (Column 44, lines 26-27), said constant curing temperature also being the end-use

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temperature of a stamp to be formed from said article formed from said elastomer reactive mix, wherein the pattern geometry of an article so-formed is fixed at end-use thermal conditions (Column 44, lines 27-28, 32-37); followed by a subsequent cure of said elastomer reactive mix at a temperature of from between about 50°C and 120°C, which curing temperature is higher than said substantial end-use temperature (Column 44, lines 39-31) and is sufficient to provide required dimensional integrity for pattern faithfulness and is sufficient to harden said elastomer reactive mix to a desired elastic modulus (Column 10, lines 11-17). Although Kim does teach a casting process, he does not explicitly teach injection molding of the stamp. Kim does disclose the urging of flow by pressure (Column 11, lines 1-5). Rosato shows that it is known for the two processes to be used as primary options when molding complex shapes (Page 1280). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Rosato's injection molding method instead of Kim's casting method in order to take advantage of time-saving and efficient injection molding techniques.

Regarding Claim 2, Kim shows the process as claimed as discussed above, including a siloxane material (Column 11, lines 54-57), meeting applicant's claim.

Regarding Claim 3, Kim shows the process as claimed as discussed above, including a method wherein said siloxane is cured to fix its geometry while at or near the intended final use temperature, followed by a high temperature step to harden said siloxane, without substantially inducing geometry changes to said stamp and said pattern (Column 10, lines 11-17), meeting applicant's claim.

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Regarding Claim 4, Kim shows the process as claimed as discussed above, including a method wherein said siloxane elastomer mix is a vinyl addition siloxane two component mixture (Column 11, lines 66), meeting applicant's claim.

Regarding Claim 5, Kim shows the process as claimed as discussed above, including using a siloxane that is room temperature curable (Column 44, lines 21-29), meeting applicant's claim.

Regarding Claim 6, Kim shows the process as claimed as discussed above, including a method wherein said elastomer reactive material is a siloxane (Column 11, lines 54-57), meeting applicant's claim.

Regarding Claim 7, Kim shows the process as claimed as discussed above, but does not show specific wiring and layering dimensions. Kumar et al., hereafter "Kumar," show that it is known to carry out a method wherein TFT and wiring dimensions contained therein are microscopically small and registration of subsequent layers of such display is within microns over many inches (Column 4, line 48). Kumar and Kim are combinable because they are concerned with a similar technical field, namely, that of plastic micromolding operations. It would have been obvious to one of ordinary skill in the art at the time the invention was made to follow Kumar's dimension criteria during Kim's molding process in order to create a product which conforms to the desired specifications.

Regarding Claim 8, Kim shows the process as claimed as discussed above, including a method of manufacturing a microelectronic pattern, said method using a fabricated stamp (Column 44, line 1-3, 32-47), meeting applicant's claim.

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Regarding Claim 10, Kim shows the process as claimed as discussed above, but does not show using a specific siloxane system. Kumar teaches that it is known to use Sylgard<sup>®</sup>, a polydimethylsiloxane widely-known in the art, as the silxane system (Column 8, line 53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Kumar's Sylgard<sup>®</sup> as the elastomeric reactive system in Kim's molding process in order to create a stamp with characteristics of molded Sylgard<sup>®</sup>.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim and Rosato as applied to claims 1 and 6 above, and further in view of Sangokoya (U.S. Patent 5,731,253). Kim shows the process as claimed as discussed above, but does not show the claimed composition. Sangokoya shows that it is known to use a siloxane system that contains moieties of hexamethylcyclotrisiloxane and hexamethyldisiloxane (Column 10, line 31). Sangokoya and Kim are combinable because they are concerned with a similar technical field, namely, that of siloxane compounds and their applicability. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Sangokoya's specific siloxane system moiety as the elastomeric reactive material in Kim's molding process in order to produce an article having characteristics of the molded moiety.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill L. Heitbrink can be reached on 703-308-0673. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9310 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



maf  
July 23, 2003



JILL L. HEITBRINK  
PRIMARY EXAMINER  
ART UNIT 137-1732

7/24/03